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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/408,694	09/30/99	ARNOLD	S 90098008

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FELIX L FISCHER LAW DEPARTMENT
ALLIEDSIGNAL INC TURBOCHARGING SYSTEM
23326 HAWTHORNE BOULEVARD
SUITE 200
TORRANCE CA 90505

EXAMINER

TRIEU, T

ART UNIT	PAPER NUMBER
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3748

DATE MAILED: 01/05/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/408,694

Applicant(s)

Steven Don Arnold et al.

Examiner

Thal-Ba Trieu

Group Art Unit

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☐ Responsive to communication(s) filed on _____

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1035 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) 1-7 is/are pending in the application

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-5 and 7 is/are rejected.

☒ Claim(s) 6 is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the *“hydraulic pressure source, a first port, a second port, a hydraulic drain, a third port, a fourth port, a first conduit, a second conduit (See claim 6), and means for supplying pressure (See claim 7)”* must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

The drawings are objected to under 37 CFR 1.83(a) because they fail to show *“actuation tabs 44”* (See Page 5, line 5); *“Elliptical slot 56”* (See Page 5, line 9); *“port A, port B, and port D”* (See page 8, line 27) as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Correction is required.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character :

- *“82”* has been used to designate two different elements (See Figure 1);

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- “84” has been used to designate both “*piston ring*” (See Page 5, line 20) and “*solenoid valve*” (See Page 5, line 26).

- - “86” has been used to designate both “*compressor impeller*” (See Page 5, line 23) and “*piston*” (See Page 5, line 28).

Correction is required.

Claim Objections

Claims 2-7 are objected to because of the following informalities:

- In claims 2-7, line 1, “A” before “*variable geometry turbocharger*” should be changed into --The--.

- In claim 6, line 8, “*forth*” before “*port*” should be replaced by --fourth--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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Claims 6 and 7 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically:

- In claim 6, *"a hydraulic source", "a hydraulic drain", "a first port", "a second port", "a third port", "a fourth port", "a first conduit", "a second conduit"* lack an enabling disclosure thereof.

- In claim 7, *"means for supplying air"* has^a similar deficiency.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 6, *"a hydraulic source", "a hydraulic drain", "a first port", "a second port", "a third port", "a fourth port", "a first conduit", "a second conduit"* render the claim indefinite, because it is not clear what elements are being referenced to the specification and to the drawings.

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Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Burdette (Patent Number 4,654,941).

Regarding claim 1, Burdette discloses a variable geometry turbocharger comprising:

a turbine housing (18) having an inlet (20) for exhaust gas and an outlet (21), a volute connected to the inlet and an integral outer nozzle wall adjacent the volute (See Figures 1-2);

a center housing (26) attached to the turbine housing and having a center bore carrying a bearing assembly (29) (See Figure 2);

a compressor housing (22) having an air inlet and a compressed air outlet, the compressor housing attached to the center housing (See Figure 1-2);

a turbine wheel (12) carried within the turbine housing (18) and attached to a shaft (16) extending through the center housing (26), supported by the bearing assembly (29), the shaft attached distal the turbine wheel (12) to a compressor impeller (13) carried within the compressor housing (22) (See Figures 1-2);

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a plurality of vanes (34) having rotation posts extending from a first surface substantially parallel to the outer nozzle wall, the posts received in circumferentially spaced apertures in the outer nozzle wall, the vanes (34) further having actuation tabs (80 and 82) extending from a second surface of the vanes distal the first surface (See Figures 2, 4, and 5);

a unison ring (48) intermediate the center housing and the vanes (34), the unison ring having a plurality of slots equal in number to the vanes (See Figures 7 and 9), said slots oriented obliquely to a circumference of the unison ring (48) and receiving the tabs (80 and 82), the unison ring (48) further having a radial slot (Read as corresponding bore 92);

a crank shaft (56) having a pin (50) engaging the radial slot (92), the crank shaft movable continuously from a first position to a second position, movement of the crank shaft causing the pin to translate in the radial slot (92) and impart force perpendicular to the radial slot (92) to urge rotational motion of the unison ring (48), the rotational motion of the unison ring causing the tabs (80 and 82) to traverse the actuation slots from a first end of the slots to a second end of the slots (81 and 83) (See Column 4, lines 15-54); and

means for moving (90) the crank shaft from the first position to the second position (See Figure 1).

Regarding claims 2-3, Burdette discloses the variable geometry turbocharger, wherein the tabs (80 and 82) incorporate substantially flat sides to be received within the actuation slots (81 and 83); and wherein the actuation slots (81 and 83) incorporate a profile predetermined to provide

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maximum engagement of a first side of each tab with the tab located at the first end and second end of the slot and maximum engagement of a second side of each tab with the tab located in the slot intermediate the first and second end. (See Column 4, lines 15-36).

Regarding claim 4, Burdette discloses the variable geometry turbocharger, wherein the moving means comprises a hydraulic actuator (90) integral with the center housing (26) and having:

a piston received in a boss integrally cast in the center housing for reciprocating motion perpendicular to the crank shaft (See Figure 1);

a piston rod (56) attached to the piston at a first end;

means for attaching the piston rod to the crank shaft (60), the attaching means converting reciprocating motion of the rod to rotational motion of the shaft (See Column 4, lines 37-63); and

means for controllably varying hydraulic pressure (40) on opposing sides of the piston to induce motion from a first position corresponding to the first position of the crank shaft to a second position corresponding to the second position of the crank shaft (See Column 4, lines 55-67, and Column 5, lines 1-3).

Regarding claim 7, Burdette discloses the variable geometry turbocharger, wherein the actuation slots are blind and further comprising:

an annular channel (30) in the center housing closely receiving the unison ring (48); and

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means for supplying air pressure to the channel to urge the unison ring (48) into close contact with the second surface of the vanes (34) (See Column 3, lines 28-44).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burdette (Patent Number 4,654,941), in view of Weyer (Patent Number 4,274,329).

Burdette discloses the invention as recited in the rejection of claim 1; however, Burdette fails to disclose the attaching means comprising a gear rack on the piston rod; and a pinion gear on the crank shaft.

Weyer teaches that it is conventional in the rotary actuator apparatus art, to utilize a gear rack (50) on the piston rod (22); and a pinion gear (52) on the crank shaft (54) (See Figure 2).

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It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the gear rack and the pinion gear, as taught by Weyer, to transmit the rotational movement to the linear motion, in the Burdette device, since the use thereof provides a large torque capacity.

Allowable Subject Matter

Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consist of the following patents:

- Arnold (US Patent Number 4,726,744) discloses a turbocharger with variable vanes.
- Gammill et al. (US Patent Number 3,645,645) disclose a variable area nozzle seal.
- Fisker (US Patent Number 4,403,913) discloses a guide blade arrangement for adjustable guide blades.

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- Uchisawa et al. (US Patent Number 5,653,419) disclose diaphragm type high pressure shut-off valve.

- Lang et al. (US Patent Number 4,304,171) disclose a power boost mechanism.

- Feces (US Patent Number 4,683,805) discloses a rotary actuator having integral piston assembly with floating rack.

- Amata et al. (Patent Number JP 358122305 A) disclose a variable nozzle mechanism for radial type turbine.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (703-308-6450) . The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (703) 308 - 2623. The fax phone number for this group is (703) 308 - 7763. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703)308 - 0861.


TTB

Thai-Ba Trieu

January 3, 2001

Patent Examiner

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THOMAS DENION
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TECHNOLOGY CENTER 3700